A STUDY OF THE GENUS MERINGOPUS FOERSTER IN EUROPE AND OF SOME RELATED SPECIES FROM ASIA (HYMENOPTERA, ICHNEUMONIDAE, CRYPTINAE)

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Abstract

Redescriptions of European and some Asiatic species of *Meringopus* Foerster, 1886, are presented, with designations of a neotype for *Cryptus pseudonymus* Tschek, 1872, and of lectotypes for *Cryptus australis* Tschek, 1870, *C. latitarsis* Thomson, 1873, *C. meridionalis* Szépligeti, 1916, *C. orientalis* Szépligeti, 1916, *C. caudatus* Szépligeti, 1916, *C. algericus* Habermehl, 1918, *C. rufiventris* Habermehl, 1918, and *C. erythrogaster* Meyer, 1933, *C. hannibal* Schmiedeknecht, 1900, and *C. cyanator* Gravenhorst, 1829; *Meringopus reverendus* nom. nov. is proposed for *Cryptus rufiventris* Habermehl, 1918, non Gravenhorst, 1829, non Szépligeti, 1916.

Introduction

This paper is the second in a series dealing with Cryptine wasps (Van Rossem, 1966). Considering the taxonomic and nomenclatorial difficulties in the Ichneumonidae, I do not pretend these studies to be taken for a monograph, but rather as a basis for such work. Although I do give notes about the biology of some species, I have not really studied the literature with respect to this point. What I have tried, is to give a sound report about the extant original material as far as I have been able to study it.

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Materials and methods

The following abbreviations are used in the text of this paper:

BM — British Museum (Natural History), London;
DEI — Deutsches Entomologisches Institut, Eberswalde;
ELW — Laboratorium voor Entomologie, Wageningen;
MA — Zoologisch Museum, Amsterdam;
MC — Universitetets Zoologiske Museum, Copenhagen;
ML — Department of Entomology, Lund University;
MR — Natuurhistorisch Museum, Rotterdam;
NMW — Naturhistorisches Museum, Vienna;
PD — Plantenziektenkundige Dienst, Wageningen;
RMNH — Rijksmuseum van Natuurlijke Historie, Leiden;
SM — Natur-Museum und Forschungsinstitut Senckenberg, Frankfurt;
TM — Természettudományi Múzeum, Budapest;
UU — Uppsala Universitet;
ZI — Muzeum Zoologiczne, Uniwersytet Wroclawski, Wroclaw;
ZM — Zoologisches Museum, Berlin.

The following technical abbreviations have been used:

OOL — distance from the outer edge of a lateral ocellus to the compound eye (ocular-ocellar line).
POL — distance between the inner edges of the two lateral ocelli (postocellar line).

External measurements were taken with an ocular micrometer (1 cm at 10 ×) on a Zeiss binocular low power microscope. All total sizes were taken at 10 × enlargement; the length of the ovipositor was measured from the apex of gaster. Most relative measurements, made for comparison of parts, were taken at an enlargement of 40 ×. For length: breadth relations, e.g. of the femora, I use the term "index". As the differences in indices are often slight, students are advised to take measurements carefully and preferably at enlargements of more than 30 ×. Male genitalia were not studied. For other terms I have made use of the book by Richards (1956).

Nomenclature and Taxonomy

The Cryptine genus *Meringopus* was proposed by Foerster (1868 : 186) without stating the species concerned. Tschek (1870a : 112) was the first author to use the name, in fact placing only one species in this generic taxon, viz. "*Cryptus recreator* Fab.", thus antedating Kokujev, 1905 (Viereck, 1914 : 92). In my opinion Tschek (1870a : 112) also designated the lectotype of *Cryptus recreator* Fabricius, 1804, thus antedating Townes (1965 : 186).

A difficulty arising from Tschek's treatment is in my view that he confused his own grouping. On careful reading it is evident that Tschek (1870a : 112) had a good concept of *Meringopus* as he wrote: "das 2.-4. Fussglied der V.- und M.-Tarsen kurz, herzförmig und mit einem starken Borstenkranze umgeben" etc., but on page 114 and 115 (a and b, respectively) he mixed up the characters of the two groups, thus causing the confusion of later authors.

The genus *Meringopus* was characterized by Foerster as having the tarsi of the front and middle legs expanded. Townes (1962 : 180) noted a decisive character, viz. the position of the axillary vein (3A) of the hind wing towards the inner hind margin. In its most characteristic position the axillary vein clearly diverges from the inner hind margin (Fig. 2 and Pl. 1 Fig. 5), in some specimens of *M. pseudonymus* it first tends to diverge but the apex then bends towards the hind margin (Pl. 1 Fig. 6). It also can run entirely parallel to the wing margin and rarely in *Meringopus* it converges towards the inner margin. In these cases confusion may occur with *Buathra* or even *Cryptus* species (Fig. 1).

A final important character is the presence of dorsal tentorial pits (Fig. 3), in their most typical appearance conspicuous hollows lying dorso-laterad or dorsad of the antennal insertions. The tentorial pits may show poor development and then are difficult to per-

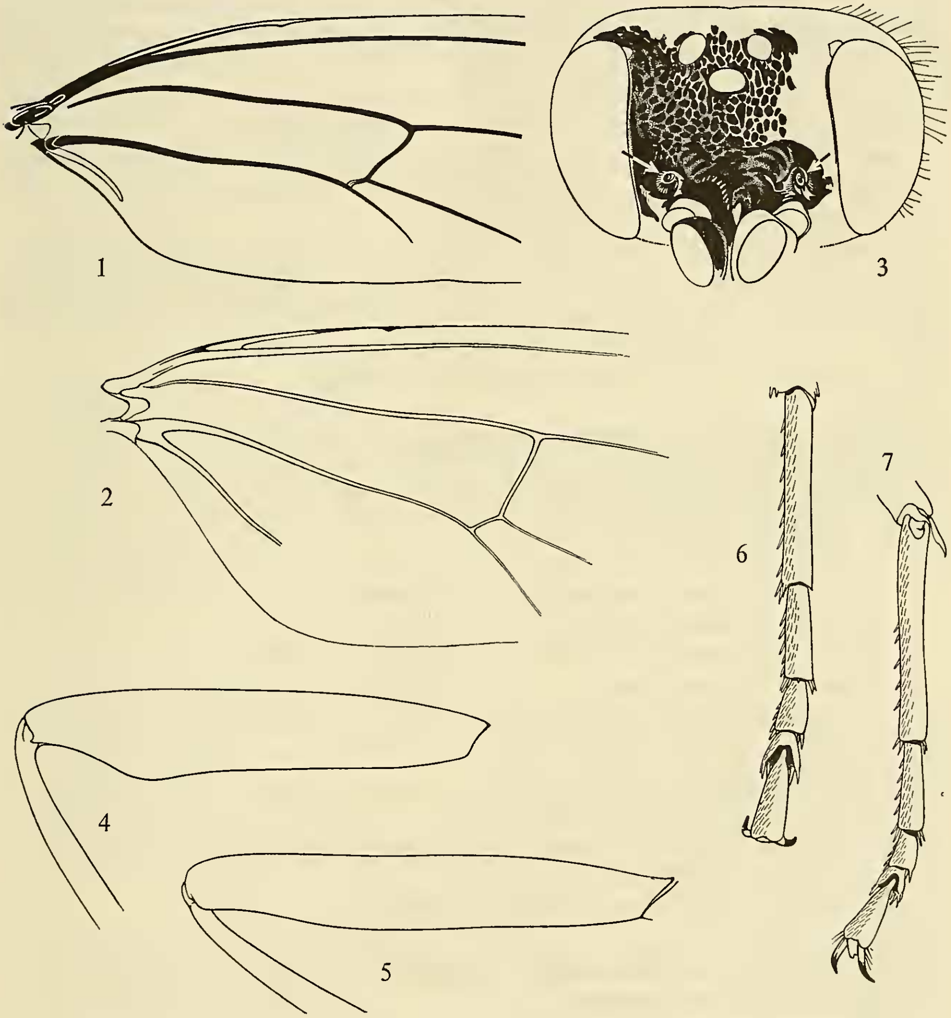

Fig. 1, *Buathra laborator* (Thunberg), ♀, Wageningen, Netherlands (ELW), axillary vein converging towards inner margin of hind wing. Fig. 2-3, *Meringopus cyanator* (Gravenhorst), ♀, Leiden, Netherlands (ELW): 2, axillary vein diverging from inner margin of hind wing; 3, head with dorsal tentorial pits, position dorsally of antennal base indicated by arrows. Fig. 4, *Meringopus calescens calescens* (Gravenhorst), ♂, Sierra Nevada, Spain (SM), hind femur with ventral expansion. Fig. 5, *Meringopus pseudonymus* (Tschek), ♂, Sa Cruz-Oran, Algeria (SM), hind femur normal, not expanded. Fig. 6-7, *Meringopus turanus* (Habermehl), ♀, Bolzano, Italy (ELW); 6, middle tarsus; 7, front tarsus ceive. In certain species of *Cryptus* there is a slight tubercle dorso-laterad of the antennae which can be mistaken for the dorsal tentorial pit. *Cryptus dianae* Gravenhorst shows this tubercle clearly. Especially in the *cyanator* group the tentorial pits are sometimes poorly developed. The lower frons of doubtful specimens should be carefully searched from different angles in strong light. Often the antennal base is in the way and trouble should be taken to relax such specimens to change the position of the antennae.

A point worth mentioning here is the nomenclature of *Cryptus obscurus* of authors. The name *Ichneumon obscurus* Geoffroy *in* Fourcroy, 1785, cannot be retained for this species since the original description does not suit the material under consideration. The next available name would be *Cryptus australis* but the ♀ type specimen is lost and the extant males belong to two different species. I thus prefer to choose *Cryptus turanus* Habermehl, 1918. I hope this will definitely clear away confusion around this species. It is regrettable that neither the name *Cryptus erythrogaster* Meyer, 1933, can be retained as it is preoccupied by *Cryptus erythrogaster* Holmgren, 1868. For this species I propose the new name *Meringopus reverendus* (p. 185).

An interesting feature is the rediscovery of Tschek's (1872) *Cryptus pseudonymus*. Although the holotype is missing, I trust that I have collected enough evidence to establish the identity of this species, which was undoubtedly confused many times with other.

The species dealt with here can be grouped as follows:

a) front and middle tarsi conspicuously expanded:
  Meringopus (Meringopus)
    M. calescens calescens (Gravenhorst, 1829)
      Cryptus crassitarsis Habermehl, 1918
    M. calescens alaicus (Townes, 1965)
      Cryptus turkestanicus Szépligeti, 1916 (name preocc. by Kriechbaumer, 1882)
    M. palmipes (Kokujev, 1905)
      Cryptus (Meringopus Först.) *latifemur* Heinrich, 1930
    M. titillator (Linné, 1758)
      Cryptus recreator Fabricius, 1804
      Cryptus australis Tschek, 1870a
      Cryptus latitarsis Thomson, 1873
      Cryptus rhodius Dalla Torre, 1902
      Cryptus meridionalis Szépligeti, 1916, partim ♀
      Cryptus orientalis Szépligeti, 1916
    M. titillator f. *meridionalis* (Szépligeti, 1916)

b) front and middle tarsi not, or slightly expanded:
  Meringopus (the *turanus* group)
    M. turanus (Habermehl, 1918)
      Cryptus obscurus auctorum partim (nec Geoffroy *in* Fourcroy, 1785)
      ?*Cryptus australis* Tschek, 1870a (the lost female syntype)
    M. suspicabilis (Kokujev, 1905)
      Cryptus piliceps var. *dubitabilis* Kokujev, 1905
    M. pseudonymus (Tschek, 1872)
      Cryptus caudatus Szépligeti, 1916

M. pseudonymus f. *hellenicus* (Schmiedeknecht, 1890)
Cryptus setosus Szépligeti, 1916
Cryptus algericus Habermehl, 1918
M. reverendus nomen novum
Cryptus rufiventris Habermehl, 1918 (name preocc. by Gravenhorst, 1829, and by Szépligeti, 1916)
Cryptus erythrogaster Meyer, 1933 (name preocc. by Holmgren, 1868)
M. hannibal (Schmiedeknecht, 1900)

c) front and middle tarsi not expanded; gaster in most cases black with bluish or violet iridescence:
Meringopus (the *cyanator* group)
M. cyanator (Gravenhorst, 1829)
M. nigerrimus nigerrimus (Fonscolombe, 1850)
?*Cryptus balearicus* Kriechbaumer, 1894
M. nigerrimus murorum (Tschek, 1872)
Cryptus serratus Thomson, 1873
M. pilosus (Szépligeti, 1916)

Relative position of *Meringopus* in the subtribe Cryptina[1])

1. Dorsal tentorial pits clearly visible 2
— Dorsal tentorial pits not apparent . . . . other genera
2. Axillary vein (3A) in hind wing diverging from, or parallel to the inner hind margin of wing (rarely converging). Dorsal tentorial pits usually well developed; when poorly developed the gaster is in most cases black, often with bluish or violet iridescence . . . *Meringopus*
— Axillary vein convergent to inner hind margin of wing (Fig. 1), weakly pigmented. Dorsal tentorial pits well developed . . . . *Buathra*

Meringopus Foerster

Key to the females

1. All femora expanded ventrally (Fig. 4 and Pl. 1 Fig. 2) 2
— Femora not expanded, normal (Fig. 5 and Pl. 1 Fig. 1 and 3) 3
2. Expansion of hind femur almost lamelliform (Pl. 1 Fig. 2); in the nominate subspecies tergites 2 and 3 orange . . . . *M. calescens*
— Expansion of hind femur present but more smoothly rounded, not lamelliform; gaster fuscous, with tergites 2 and 3 dark brown . . . . *M. palmipes*
3. Tarsal segments 2, 3 and 4 of front and middle legs expanded (Pl. 1 Fig. 3 and 4); basitarsus of middle leg short and broad (Pl. 1 Fig. 3); tip of ovipositor upcurved (Pl. 2 Fig. 4) . . . . *M. titillator*
— Tarsi of front and middle legs not, or slightly expanded 4
4. Concavity of frons inconspicuous, shape of frons more as in *Cryptus*; the tentorial pits may show poor development but in most cases the axillary vein in the hind wing diverges clearly from the hind margin (*cyanator*-group) 5
— Concavity of frons very conspicuous 7
5. Ridges on ventral side of ovipositor tip not developed and thus not projecting below the lower edge of ovipositor (Pl. 2 Fig. 2); gaster black with bluish or violet iridescence . *M. cyanator*
— Ridges on ventral side of ovipositor tip developed and projecting below the lower edge of ovipositor (Pl. 2 Fig. 5 and 6) 6
6. All femora bright orange (material from the Alps and Scandinavia) *M. nigerrimus murorum*

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[1]) A key to the genera will be published in a following paper on the genus *Cryptus* s.str. I am indebted to Dr. Henry Townes for information on the generic division of the Cryptina.

— All femora deep ferruginous-black to black (material from Spain and Central Asia) . . . . *M. nigerrimus nigerrimus*

7. Postpetiole and following two tergites almost polished; with close, erect, silvery hairs on face and head; OOL: POL, 14 : 13, posterior ocellus remote from compound eye; OOL: diameter of posterior ocellus, 2 : 1; index of postanellus 6.2 (slender!). Gaster with very conspicuous colouring, viz. all tergites with a bright violet-blue iridescence (in daylight), tergites 2 and 3 tending to reddish; tergites 4 to apex fuscous. Ovipositor long, about 7.5 mm . *M. pilosus*

— Tergites 2 and 3 not polished; not agreeing with the above set of characters . . . 8

8. Sublateral corners of posterior transverse propodeal carina developed into conspicuous horns, which rise about 0.20 mm above the level of propodeum. Postanellus relatively slender, index, 5.2—6.1. Dorsal tentorial pits present but shallow, characterized by a flattened elevation in the centre of pit. Axillary vein in the hind wing heavily pigmented, absolutely parallel to hind margin, apex bending towards hind margin. Pleural parts and propodeum roughly rugose. Completely fuscous specimens, legs and gaster somewhat brownish, wings rather infuscate. A large species from North Africa . . . . *M. hannibal*

— Sublateral corners of posterior propodeal carina not horn-like 9

9. The following combination of characters: gaster bright orange; length of ovipositor about 5.8 mm, tip of ovipositor rather characteristic (Pl. 2 Fig. 8); hairs on face adpressed; OOL: diameter posterior ocellus, 1 : 1, posterior ocellus close to compound eye; OOL: POL, 6 : 7. Index of postanellus 5.0. Front femur slender . . . . *M. reverendus*

— Tip of ovipositor not agreeing with Pl. 2 Fig. 8, either as in Pl. 2 Fig. 4, or in Pl. 2 Fig. 1 or Pl. 2 Fig. 3 (in the two last mentioned cases the ovipositor is mostly long) . . . 10

10. Gaster black, with conspicuous blue iridescence; ovipositor of the *titillator* type (Pl. 2 Fig. 4), differing from the *M. turanus*-ovipositor (Pl. 2 Fig. 3); index of hind femur about 5.5 (rather slender) . . . .*M. suspicabilis*[1])

— Not this combination of characters 11

11. Hind femur slender, index about 5.1—6.0; tip of ovipositor as in Pl. 2 Fig. 3; colour of the gaster in the available material for the greater part ferruginous to brightly orange . *M. turanus*

— Hind femur rather stout, index 4.3—5.0; in cases of doubt: ovipositor mostly long, 0.6—1.0 of length of front wing, tip, Pl. 2 Fig. 1; gaster with petiole and apex more often fuscous, other tergites ferruginous to orange . . . . *M. pseudonymus*

TENTATIVE KEY TO THE MALES

Though I have aimed at a key based exclusively on morphological characters, this has failed in some respects.

1. Femur 3 with ventral expansion (Fig. 4) . . . . *M. calescens*

— Femur 3 not expanded, normal (Fig. 5) 2

2. Head and thorax with striking, long, erect, silvery hairs; on temple and gena these hairs are about as long as the width of the mandibular base. Dorsal tentorial pits conspicuous. Width of mandibular base: malar space, 3 : 4. Malar space wide. OOL: POL, 15 : 13; OOL: diameter of posterior ocellus, 15 : 7. OOL wide. Sublateral corners of posterior propodeal carina strongly dentated. Gaster ferruginous and tergites alutaceous. Karakorum range . *M. pilosus*

— Head and thorax not with very conspicuous, long, erect, silvery hairs 3

3. Sublateral corners of posterior propodeal carina developed into conspicuous horns, which rise about 0.15 mm above the level of propodeum. Dorsal tentorial pits present, but shallow, characterized by a flattened elevation in the centre of the pit. Axillary vein in hind wing rather pigmented, long, absolutely parallel to hind margin of wing, apex bending towards hind margin. Pleural parts and propodeum roughly rugose. Gaster black. A large species, up to now only known from North Africa . . . . *M. hannibal*

— Sublateral corners of posterior propodeal carina not horn-like. Not the above combination of characters 4

4. Gaster fuscous-ferruginous to bright orange-red, without bluish iridescence. Hairs on head not conspicuously long and erect 5

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[1]) Based on a homotype from Dr. H. Townes.

— Gaster black (in daylight) with faint bluish iridescence. Hairs on head fuscous (not silvery), long and erect 8

5. Femur 2 short and rather stout, index 5.0—5.8; index femur 3, 4.9—6.0. Axillary vein of hind wing clearly diverging from inner hind margin (Pl. 1 Fig. 5) . . . . *M. titillator*

— Femur 2 more slender, index 6.1—7.1. Axillary vein in hind wing running about parallel to inner hind margin, or diverging but with the apex bending towards the hind margin (Pl. 1 Fig. 6) 6

6. Axillary vein of hind wing running about parallel to inner hind margin. Index of femur 2, 6.7—7.1. Index of femur 3, 5.7—6.8 . . . . *M. turanus*

— Axillary vein of hind wing diverging, but with the apex bending towards hind margin (Pl. 1 Fig. 6). Index of femur 2, 6.1—6.6 7

7. Index of femur 2, 6.1—6.6. Index of femur 3, 6.0—6.7. Sides of areola converging. Hind femora more often fuscous (except in specimens from Cyprus) . . . . . *M. pseudonymus*

— Index of femur 2, 6.3[1]). Index of femur 3, 5.7. Sides of areola almost parallel, areola square and relatively large. Though unreliable, the colour of this male might be of use: legs beyond trochanters bright orange. Gaster entirely bright orange, except for the tip of clasper (*M. pseudonymus* males with an orange gaster do also occur!). One male (the paralectotype) from northern Alai range in U.S.S.R. . . . . *M. reverendus*

8. At least the hind leg fuscous. Dorsal tentorial pits conspicuous. Rather small specimens with the front wing not exceeding 6.7 mm . . . . . . *M. nigerrimus nigerrimus*

— At least the hind femur bright orange 9

9. Tarsal segments of hind leg for the greater part white. Hairs on head long, somewhat exceeding the width of malar space, reddish-brown to fuscous. Smaller specimens with front wing about 7.0 mm . . . . *M. nigerrimus murorum*

— Tarsal segments of hind leg brown to ferruginous. Hairs on head erect but not always reaching the length of those in *M. nigerrimus murorum.* Front wing more often larger than 7.0 mm. A larger and more generally distributed species . . . . *M. cyanator*

Meringopus calescens (Gravenhorst, 1829)

M. calescens is a holarctic species (Townes, 1962). The American material belongs to a separate subspecies, viz. *M. calescens robustus* (Cresson, 1864) (Townes, 1962). In the mountainous areas of the western Palaearctic region (Alps, Pyrenees, Spain, Greece) the nominate subspecies *M. calescens calescens* occurs. A fuscous form of the male, described by Seyrig (1928a) as var. *nevadensis* is found in the Sierra Nevada (Spain). A distinct subspecies, *M. calescens alaicus* (Townes) lives in the mountains of southern central Asia (Alai Range and Pamir). The British Museum has a set from Persia, belonging to *M. calescens calescens.*

Two subspecies are known to me, the females of which are separable as follows:

1. Mesoscutum highly polished, with some scattered punctures; wings deeply infuscate with violet iridescence; gaster with tergites 2 and 3 fuscous-ferruginous with apical margins reddish, or gaster completely black with bluish iridescence. Alai mountains, Turkestan and central Pamir . . . . *M. calescens alaicus*

— Mesoscutum not conspicuously polished, punctures separated by about their diameters or somewhat more; wing infuscate without violet iridescence; gaster with tergites 2 and 3 orange. Alps, Pyrenees and Spain . . . . *M. calescens calescens*

Meringopus calescens calescens (Gravenhorst, 1829)

Cryptus calescens Gravenhorst, 1829, Ichneumonologia Europaea 2 (2): 548, ♀ (no. 127).
Cryptus crassitarsis Habermehl, 1918, Zeitschr. wiss. Insekt.-Biol. 14: 146, ♂.

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[1]) At present based on the paralectotype only.

Characteristics of the lectotype of *Cryptus calescens*. Female, 16.0 mm. Labels: lectotype Townes 1964 (ZI). Segments 2, 3 and 4 of front tarsus expanded, with heavy tarsal pecten. All other tarsi missing. All femora with conspicuous ventral widening (compare Fig. 4 and Pl. 1 Fig. 2).

Description of the female of *M. calescens calescens*. — Body length about 16.0 mm. Length of front wing 11.4 mm. A comparatively large Ichneumonid.

Head black. Clypeus well defined, polished, with some heavy punctures. Face with central convexity weak, alutaceous, with regularly placed fine punctures from which suberect hairs arise. Lower half of frons polished, deeply concave, with dorsal tentorial pits conspicuous and some transverse wrinkling. Upper half of frons roughly wrinkled. OOL : POL, 5 : 4. Temple and gena polished, with rather widely placed punctures from which erect hairs arise. Gena (at base of eye) : breadth compound eye, 7 : 5, thus broad. Antennae with scapus in frontal aspect pear-shaped; index of postanellus, 4.5.

Thorax black. Epomia distinct, but not strong. All parts of thorax roughly sculptured, except for mesoscutum and scutellum 2. Mesoscutum polished, with heavy prescutal sutures and rather irregularly placed punctures. Propodeum with anterior propodeal carina rather obliterated, posterior carina heavily developed, sublaterally with blunt, heavy dentation. Wings rather infuscate. Axillary vein (3A) in the hind wing diverging from inner hind margin. Legs with all coxae and trochanters black (in strong light ferruginous). Remaining parts of legs orange. All femora with a conspicuous ventral widening, abruptly constricted subapically (compare Pl. 1 Fig. 2). Tarsal segments 2, 3 and 4 of front and middle legs expanded, with a conspicuous tarsal pecten (Pl. 1 Fig. 2). Thus *M. calescens* seems to be a burrowing species.

Gaster with 1st segment mostly fuscous to fuscous-ferruginous. Segments 2 and 3 orange; apical segments mostly black. Ovipositor about 5 mm, slightly upcurved. Ovipositor tip upcurved between notch and apex (Pl. 2 Fig. 9).

Male. — Body size up to 15 mm. Length of front wing 10—12 mm.

Head black. Clypeus rather convex. Face alutaceous with lateral parts regularly punctured and central convexity weak. Lower half of frons deeply concave, dorsal tentorial pits distinct. Temple and gena polished, but rather closely sculptured (different from female). Hairs on head conspicuous, suberect to erect, on temple as long as apical breadth of postanellus. Inner and outer orbits marked yellow, spot on eye margin in OOL region.

Thorax black, roughly sculptured, except for mesoscutum and scutellum 2, which are more polished. Epomia present but relatively weak. Both propodeal transverse carinae present, the posterior sublaterally dentated. Wings infuscate. Axillary vein in the hind wing heavy, diverging from inner hind margin. Legs with all coxae and trochanters black. Remaining part of legs ranging from fuscous-ferruginous to orange. Only the hind femur shows the conspicuous widening characteristic of the *M. calescens* female (compare Fig. 4). Tarsal segments 2, 3 and 4 of hind leg ranging from reddish brown to whitish.

Gaster black with a faint bluish iridescence, apical margins of tergites 2 and 3 reddish (in f. *nevadensis* Seyrig, 1928) to tergites 2 and 3 orange red. Apex of male clasper truncate.

The holotype of *Cryptus crassitarsis* is a male in Habermehl's collection in the Senckenberg Museum at Frankfurt (Main). The specimen belongs to *M. calescens calescens*.

Characteristics of the holotype of *Cryptus crassitarsis*. — Male, 15.0 mm. Front wing

11.7 mm long. Labels: Savognin, A. Weis, 17.VI.1910, a red museum label "Typus", a label with Habermehl's writing "*Cryptus crassitarsis* Hab. ♂". Holotype so labelled.

Because of paucity of material, Habermehl probably did not know the male of *M. calescens*. His specimen of *C. crassitarsis* nevertheless shows the conspicuous ventral expansion of the hind femur, typical of the *M. calescens* male.

Material studied. — Austria: 2 ♀, Obladis (Nordtirol), 26.VI.1921, leg. Clément (SM). France: ♀, Digne, VI.1908, leg. Becker (ZI); 3 ♂ & 2 ♀, S. E. France (Dauphine), la Bérarde, 4.VII.1939, leg. E. C. M. Ernest (BM 1951-60, Yarrow coll.); ♀, la Grave (Hautes Alpes), VII.1908, leg. W. Rothschild (BM 1909-281); 4 ♀, Pyrenees (BM 1904-120, Marshall coll.). Greece: 3 ♀, Makedonia, Olympos, Spilios Agapitos, 2100 m, 28.VII—5.VIII.1965, leg. Blommers (MA). India: ♂, Khardong Valley, 4000—4500 m, 22.VII.1930, leg. J. A. Sillem (Ned. Karakorum expeditie, MA). Iran: 2 ♀ & 7 ♂, S. W. Persia, Escalera, leg. K. Sefid (BM 1900-61). Italy: ♀, "pedemontanas" (Piedmont), coll. Gravenhorst (lectotype of *C. calescens*) (ZI); ♀, Seis (Siusi, prov. Bolzano), 6.VII.1908, leg. Weis (SM). Spain: ♀, Ribas (prov. Barcelona), 10.VII. 1925, leg. Marten (SM); ♂, Sierra Nevada, VI.1926, leg. Dusmet (SM). Switzerland: ♂, Savognin, 17.VI.1910, leg. Weis (holotype of *C. crassitarsis*) (SM); ♀, Genève(?), 4.VIII.1922 (SM); ♂, Ferpècle (Valais), 7—8000 ft, 22.VI.1935, leg. J. E. & R. B. Benson (BM 1935-581).

Meringopus calescens alaicus (Townes, 1965)

Crypus turkestanicus Szépligeti, 1916, Ann. Mus. Nat. Hung. 14: 243, ♀ (name preoccupied by Kriechbaumer, 1882).

Trachysphyrus calescens alaicus Townes, 1965, Mem. Amer. Ent. Inst. 5: 178, ♀ (nomen novum for *C. turkestanicus* Szépligeti, 1916, non Kriechbaumer, 1882).

The type-material of *Cryptus turkestanicus* Szépligeti, 1916, two females from the Alai Range, is preserved in the National Museum of Hungary, Budapest. This material represents a distinct subspecies of *M. calescens* for which Szépligeti's name cannot be retained as Kriechbaumer used the combination *Cryptus turkestanicus* in 1882. In 1965 Townes used the combination *Trachysphyrus calescens alaicus* for this subspecies. Both females agree mainly with normal *M. calescens,* but differ in some respects. The following short description is based on the two type specimens.

Head black. Frons deeply concave, with conspicuous dorsal tentorial pits. Antennae slender, fuscous. Index of postanellus 5.6. Temple and gena highly polished, with some scattered punctures.

Thorax black. Mesoscutum and scutellum 2 highly polished, with some scattered punctures (in *M. calescens calescens* the mesoscutum is more densely punctured!). Wings deeply infuscate with a violet iridescence. Axillary vein in the hind wing diverging from inner hind margin. Legs with coxae and trochanters fuscous-ferruginous in strong light. Femora and tibiae conspicuous orange red. All femora with the ventral widening. Tarsal segments 2, 3 and 4 of front and middle legs expanded and with a tarsal pecten.

Gaster with 1st segment fuscous. Tergites 2 and 3 fuscous ferruginous with apical margin reddish. Apical segments black with a faint bluish iridescence (in daylight). Ovipositor slightly upcurved, 5.5 mm long.

A specimen from Central Pamir, 16.VII.1928, leg. Reinig, in the collection of Dr. Henry Townes, belongs to the subspecies *alaicus* (Townes), but has the gaster completely black with bluish iridescence and the legs fuscous except for the orange hind femur. I think that there is no reason for describing this form as a separate subspecies.

Material studied. — U.S.S.R.: 2 ♀, Alai Range, 1905, leg. Korb (syntypes of *Cryptus turkestanicus*) (TM); ♀, Central Pamir, Ak-baital, 4060 m, 16.VII.1928, leg. Reinig (ex Berlin 1963; coll. H. Townes).

Biology. — According to Townes (1962) the species occurs near the timber line among scattered conifers in grassy areas. This agrees with the habitat of the European material. There are no data with respect to the host, but considering the broad tarsi I would suggest a burrowing behaviour.

Meringopus palmipes (Kokujev, 1905)

Cryptus palmipes Kokujev, 1905, Russk. Ent. Obozr. 5 : 208, ♀. Type not seen.
Cryptus (*Meringopus* Först.) *latifemur* Heinrich, 1930, Konowia 9 : 92, ♀.

My knowledge of this species is based on a single female in the British Museum with the following label: North Siberia, Jakutsk. 1902-196. On the reverse of the label the date: 24.V.1900. In the BM the specimen is placed under *M. sovinskii,* but on careful identification with Meyer's key (1933)[1] it falls under "*Cryptus*" *palmipes.* It should be realized however that the differences between *C. sovinskii* and *C. palmipes* are not convincing, viz.: "(20) claws of the front leg with two clear teeth (*sovinskii*); (21) claws of the front leg with one tooth (*palmipes)*". These teeth however belong to a pecten at the base of the claw and show rather strong variation in *Meringopus.* My choice of *M. palmipes* for this specimen is based on the presence of one tooth and the fact that tergite 2 has a vague ferruginous hind margin. I regret not to have seen the original material.

Whatever the right name for this specimen may be, the taxonomic position of it is worth considering since it takes a clear intermediate position between *M. calescens* and *M. titillator.* In the first species the hind femur has a lamelliform expansion distally, while the specimen under consideration has a smoothly rounded expansion of the hind femur, not lamelliform in character. In *M. titillator* the hind femur is practically normal in shape. The essential difference between this *palmipes* specimen and *M. titillator* are the expanded front and middle femora in the former.

I had placed Heinrich's (1930) *M. latifemur* in the synonymy of this species as Heinrich's description of the femora closely agrees with this specimen, viz. "sie sind auf der Unterseite deutlich erweitert, doch springt diese Erweiterung lange nicht so weit und leistenartig vor wie bei *calescens* Grav.".

Later, I received the lectotype of *Cryptus (Meringopus) latifemur* Heinrich, kindly sent by Dr. B. Pisarski, Instytut Zoologiczny, Warszawa. The specimen (the lectotype; Townes, 1965) agrees with my interpretation of *Cryptus palmipes* Kokujev.

Material studied. — U.S.S.R.: ♀, North Siberia, Jakutsk, 24.V.1900 (BM 1902-196); ♀, Mondy, Sajan Gbg. (Mus. Zool. Polonicum, Warszawa 6/46, ex coll. G. Heinrich) (the lectotype of *Cryptus latifemur*).

Meringopus titillator (Linné, 1758)

Ichneumon titillator Linné, 1758, Systema Naturae, ed. decima : 565, ♂ (no. 5).
Cryptus recreator Fabricius, 1804, Systema Piezatorium: 85, ♀.
Cryptus australis Tschek, 1870a, Verh. zool.-bot. Ges. Wien 20: 116—117, ♂.

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[1] Translation in Konowia 13 (1934) : 36—37.

Cryptus latitarsis Thomson, 1873, Opuscula Entomologica 5: 483, ♀ ♂.

Cryptus rhodius Dalla Torre, 1902, Catalogus Hymenopterorum 3: 586, nomen novum for *C. australis* Tschek, non Guérin, 1850.

Cryptus meridionalis Szépligeti, 1916, Ann. Mus. Nat. Hung. 14: 243, ♀.

Cryptus orientalis Szépligeti, 1916, Ann. Mus. Nat. Hung. 14: 244, ♀.

Meringopus titillator is an impressive Cryptine showing close relationship with *M. calescens*. The species is widely distributed in the mountainous parts of the southern palaearctic region. The presence as far north as Uppsala is rather striking and not easily explicable.

Roman's (1932) investigations on Linné's type material brought to light the real identity of *Ichneumon titillator* Linné, a name which had been incorrectly used by many authors since Gravenhorst (van Rossem, 1965), while Fabricius' name *C. recreator* was mostly used for the species under consideration.

Tschek (1870a) described his *Cryptus australis* from two males, which appear to be conspecific with *Ichneumon titillator*, and one female (see under *M. turanus*). *Cryptus rhodius* Dalla Torre was introduced as a new name for *C. australis* Tschek, not Guérin, 1850.

It is not quite clear to me why Thomson (1873) redescribed this easily recognizable species, using the name *C. latitarsis*. Szépligeti's (1916) treatment is still less comprehensible.

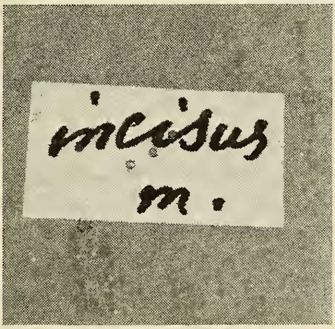
incisus
m.

Fig. 8. Original label by Tschek

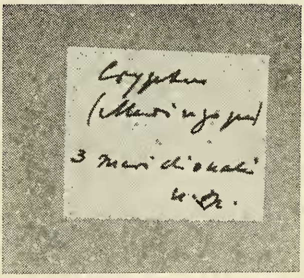
Cryptus
(Meringopus)
3 meridionalis
[illegible]

Fig. 9. Original label by Szépligeti

Characteristics of the lectotype of *Ichneumon titillator*. Male, 18.1 mm. Front wing 12.5 mm long. Labels: none. Lectotype designated by Roman (1932), labelled by van Rossem (1965).

Head black, with yellowish marking of inner and outer orbits, clypeus and mandibles. Face, temple, gena and mandible with conspicuous long, grey hairs. Dorsal tentorial pits distinct.

Thorax black. Front coxae spotted yellow; front legs orange. Middle coxae partly fuscous, femur and tibia orange. Hind femur black with spot of red at base, tibia black. Tarsi missing. Axillary vein in hind wing strongly diverging from inner margin. Indices of femora: femur 1, 4.4; femur 2, 5.6; femur 3, 5.2.

Gaster with first tergite black, following five tergites orange, apex black. The specimen agrees well with the modern concept of *M. titillator* (Linné).

Description of the female. — Body length 12.5—16.7 mm. Front wing 9.3—13.0 mm long.

Head black. Mandibles, labrum and clypeus reddish-ferruginous to black. Antennae rufous to black. Index of postanellus 4.1—5.5. Frons deeply concave with dorsal tentorial pits indicated to moderately developed. OOL : POL, 6 : 5. Head covered with short, adpressed to suberect bristles. Temple more closely punctured, gena widely and shallowly punctured. Gena at base of compound eye broad, somewhat variable in breadth. Breadth gena : breadth compound eye, 1 : 1 to 6 : 7.

Thorax black, in some specimens tending to ferruginous, roughly sculptured, except for mesoscutum, which is more polished, with small dense punctures. Anterior propodeal carina obliterated to present medially, the posterior carina well developed, bluntly dentate sublaterally. Wings subhyaline to rather strongly infuscate. Axillary vein (3A) in the hind wing clearly diverging from inner hind margin of wing (Pl. 1 Fig. 5) (in *M. turanus* more parallel). Legs with front and middle femora short and broad; indices femur 1, 3.0—3.5; femur 2, 3.6—3.9. Tarsal segments 2, 3 and 4 of front and middle leg triangular in shape, expanded, with a strong tarsal pecten (Pl. 1 Fig. 3 and 4), basitarsus of middle leg comparatively broad and short (Pl. 1 Fig. 3) (compare *M. turanus*). Hind femur index, 5.1—5.7, tarsus normal. The colour of the femora ranges from completely black to orange, especially in the hind femur. The same holds for the coxae (ferruginous to black) and the tibiae (brownish to orange).

Gaster with first segment mostly ferruginous to black, 2nd tergite ranging from orange to black, 3rd and 4th tergite mostly orange, apical segments orange to black. Ovipositor long 4.5—6.7 mm, tip, Pl. 2 Fig. 4.

Male. — Body length 12.2—15.7 mm. Front wing 8.3—11.5 mm long.

Head black. Palpi, labrum, mandibles (except for teeth), clypeus, malar space, inner orbits, central convexity and outer orbits may all show yellow colouring. This variability in colour has no apparent taxonomic value. On the antennae the first tyloid is mostly situated on the 19th antennal segment (nor does this character offer a taxonomic criterion). Dorsal tentorial pits mostly well shown. Students of the genus *Meringopus* should take care to verify the presence of the tentorial pits, since some of the larger *Cryptus*-males can be easily mistaken for *Meringopus*-males (e.g. *C. leucocheir*).

Thorax black. Wings subhyaline to rather strongly infuscate. Axillary vein in the hind wing in most cases clearly diverging from the inner hind margin of the wing. Legs with no special features such as in the female. An important character is the index of the middle femur which ranges from 5.0—5.8, thus much shorter and thicker than in *M. turanus* or *M. pseudonymus*. The hind femur must have an index of 4.9—6.0. Variation in the colour of the legs as in the female. Tarsal segments 2, 3 and 4 of the hind leg more often white.

Gaster with first segment deep ferruginous to black. In many specimens all further segments are orange, with clasper fuscous. Specimens with black apical segments also occur.

As Linné's type material of *Ichneumon titillator* only comprised males, probably 19th-century authors have not recognized the real identity of Linné's species. Consequently Fabricius' name, *Cryptus recreator*, came into use for this species.

In my opinion Tschek (1870a : 112) writing: "Fabricius sagt, er habe dieses Thier aus Oesterreich von Megerle erhalten; und wirklich findet sich das ♀ von Megerle's eigener Hand bezettelt, unter dem Namen: *Cr. recreator* F. in der reichen Sammlung des k. k. Museums in Wien", designated the lectotype of *C. recreator.* For this reason I think Townes could not find the type specimen in the Fabricius collection at Copenhagen. Thus he labelled a specimen of *titillator* under *Cryptus regenerator,* but I think this designation is invalid. As *Cryptus recreator* is a junior subjective synonym I think the question is of secondary interest.

About *Cryptus australis* Tschek, Dr. Max Fischer of the Vienna Museum wrote to me: "Von *Cryptus australis* Tschek = *rhodius* D.T. ist kein ♀ von Tschek hier". Thus the female syntype is lost. Of the type series two males are extant, both with a label "Erber Rhodus". As Tschek wrote about the 2nd tergite "an der Basis schwarz", we have to look for this character. The two males conforming to this requirement are both *M. titillator* specimens. As Tschek clearly stated about the female "Fussglieder des ♀ normal", I consider the possibility that the lost female syntype belonged to *M. turanus.*

Characteristics of the lectotype of *Cryptus australis.* Male, 15.0 mm. Front wing 10.6 mm long. Labels: a small violet tag, a white label "Erber Rhodus 1868", a white label "*australis* Tschek det. Habermehl". Lectotype hereby designated and labelled accordingly. The specimen belongs to *M. titillator* (L.). Index of femur 2, 5.7. Axillary vein in the hind wing diverging from inner margin.

According to Fil.lic. Hugo Andersson the type series of Thomson's *Cryptus latitarsis* comprises three specimens, two of which were kindly sent to me.

Characteristics of the lectotype of *Cryptus latitarsis.* Female, 12.5 mm. Front wing 9.3 mm long. Label: a small white tag "Oel" (meaning Öland, the type locality), a modern museum number 1968 no. 6 (a green tag). Lectotype hereby designated, labelled accordingly and remounted. The specimen agrees in every respect with the modern concept of *M. titillator.*

A second specimen, a male, undoubtedly a syntype, was labelled paralectotype. The specimen has a label "Oel" and a museum number 1968 no. 5, it belongs to *M. titillator.* Index of femur 2, 5.7.

The type series of *Cryptus meridionalis* Szépligeti comprises 2 specimens. It is preserved in the Hungarian National Museum at Budapest and was kindly sent to me by Dr. L. Móczár. The first of these specimens, the lectotype bearing Szépligeti's label (Fig. 9), is a specimen from Spain, Sierra d'Espuña. It is undoubtedly *M. titillator,* but a rather interesting form of it. A short description follows here.

Characteristics of the lectotype of *Cryptus (M.) meridionalis.* Female, 16.7 mm. Front wing 13 mm long. Labels: a white tag "Hispan. mer. Sierra d'Espuña", a red tag, a white label with Szépligeti's writing in ink "*Cryptus (Meringopus)* 3. *meridionalis* n.sp.". Lectotype hereby designated and labelled accordingly. I have added a label, *Meringopus titillator* forma *meridionalis.*

Head black. Dorsal tentorial pits distinct. Index of postanellus 4.1.

Thorax black. Wings somewhat infuscate. Axillary vein in the hind wing diverging from inner hind margin. The legs show the typical characters of this form, viz., index of front femur, 3 (the average is above 3). Tarsal segments 2, 3 and 4 of front and middle legs more developed than in the average individual of *Meringopus titillator*. The tarsal pecten of the middle leg is very conspicuous.

Gaster with first segment fuscous, tergites 2, 3, 4 and 5 orange, apex fuscous-ferruginous.

The second specimen has the following labels: Asia min. Dr. L. Lendl; Bulgar Maden 1.VIII.1906. A small specimen of *M. titillator*.

The type series of *Cryptus (M.) orientalis* Szépligeti, 1916, comprising two specimens, is also preserved at Budapest.

Characteristics of the lectotype of *Cryptus orientalis*. Female, 15.5 mm. Front wing 12.0 mm long. Labels: a tag "Kaukas. Leder", a red tag, Szépligeti's label "*Cryptus (M.) orientalis* n.sp.". Lectotype hereby designated and labelled accordingly. The specimen has the second tergite ferruginous ("zweites Segment schwarz", according to the author, but he did not look with proper light). It is an ordinary specimen of *M. titillator*.

A second specimen labelled: Asia min. Náday 1911, Karaman VII.8., is also an ordinary *M. titillator* female. I labelled it paralectotype.

With the type series of *M. orientalis* also a male was sent, not a syntype. It proved to be a *M. titillator* ♂. Labelled: Wan, Armen.

Material studied. — Algeria: ♂, Algiers, coll. Habermehl (SM). Austria: ♀, Piesting, 16.VIII.1866, leg. Tschek (NMW); ♀, Piesting, 8.VII.1870, leg. Tschek (NMW); 2♀, Piesting, 25.VI.1871, leg. Tschek (NMW); ♀, Piesting, 6.VIII.1871, leg. Tschek (NMW); ♀, Piesting, leg. Tschek (NMW). Cyprus: ♀, 2♂, Amathus, III.1935, leg. G. A. Mavromoustakis (BM 1935-290); 4♂, Yermasogia, III.1935, leg. G. A. Mavromoustakis (BM 1935-290). Czechoslovakia: ♀, label illegible, 4.VI.1890 (BM 1935-271, R. von Stein coll.). France: ♀, Digne, VI.1908, leg. Becker (ZI); ♀, Corse, Corte, Val Tavignano, 600 m, 3.VI.1964, leg. M. A. Lieftinck (RMNH); ♂, Corse, S. Pierre de Venaco, 4—800 m, 30.V.—2.VI.1964, leg. M. A. Lieftinck (RMNH); ♂, Corse, env. Bastia, col de Teghimo, 3—550 m, 24.V.1964, leg. M. A. Lieftinck (RMNH); ♀, St. Nectaire (Auvergne), 4.VIII.1930, leg. J. Westenberg (MA); ♀, Banyuls s.M. (Pyr. orient.), 25.VI—4.VII.1956, leg. exc. Zool. Mus. (MA); ♀, les Baux (Dep. B. d. Rhône), 30.V.1952, leg. exc. Engel (MA). Germany: ♀, Baiern, München, coll. Wüstnei (MC). Greece: ♀, Athen, leg. Schmiedeknecht (ex Berlin) (Henry Townes, Ann Arbor); ♀, Parnass, coll. Wüstnei (MC); ♀, Attica, coll. Wüstnei (MC); ♀, Corfu, leg. Schmiedeknecht (SM); 2♂, Rhodus, 1868, leg. Erber, coll. Tschek (lectotype and paralectotype of *C. australis*) (NMW). Iran: 3 ♀ & 3 ♂, S.W. Persia, Escalera, leg. K. Sefid (BM 1900-61). Italy: ♀, Bolzano, leg. Schmiedeknecht (SM); ♀, Valle de Ordesa, 23.VII., leg. Seitz (SM); ♂, Sicily, Palermo, leg. Stadt (ex Berlin) (Henry Townes, Ann Arbor). Spain: ♀, Sierra d'Espuña, leg. Szépligeti (lectotype of *C. meridionalis)* (TM); ♀, Elihe, leg. Schmiedeknecht (SM); ♀, Palencia, leg. Paganetti (SM); ♂, la Aliseda (Avila), 900 m, 23.VI.1961 (RMNH). Sweden: ♀, ♂, Öland, leg. Thomson (lectotype and paralectotype of *C. latitarsis* (ML); ♀, Öland, leg. Thomson, coll. Drewsen (MC); ♀, Sweden, leg. Thomson, coll. Wüstnei (MC); ♀, Gotland, Ljugarn, 1953, leg. J. Briedé (MA). Switzerland: ♀, Schweiz, coll. Wüstnei (MC); ♂, Sierre, 31.V. 1885, coll. Wüstnei (MC); ♀, Sierre, VII.1886 (ex Berlin) (Henry Townes, Ann Arbor); ♂, Schweiz (ex Berlin) (Henry Townes, Ann Arbor). Turkey: ♀, Karaman, 8.VII.1911, leg. Náday (TM). U.S.S.R.: ♀, Kaukasus, leg. Leder (lectotype of *C. orien-*

talis (TM); 2 ♂, Armenia, 13 & 16.V.1959, leg. G. A. Victorov (Henry Townes, Ann. Arbor); Armenia, ♀, 16.V.1959 & ♀, 3.VI.1959, leg. G. A. Victorov (Henry Townes, Ann Arbor); ♂, Armenia (TM); ♀, Borisoglebsk, 29.VI.1955, leg. G. A. Victorov (Henry Townes, Ann Arbor); ♂, Borisoglebsk, 6.VI.1959, leg. G. A. Victorov (Henry Townes, Ann Arbor). Yugoslavia: ♀, Bulgar Maden, 1.VIII.1906, leg. L. Lendl (TM). No locality: ♂, coll. Schmiedeknecht (ELW).

Meringopus turanus (Habermehl, 1918)

Cryptus obscurus auctorum partim, non Geoffroy, 1785.
? *Cryptus australis;* Tschek, 1870a, Verh. zool.-bot. Ges. Wien 20: 116—117, partim (♀ ?).
Cryptus turanus Habermehl, 1918, Zeitschr. f. wiss. Insekt-Biol. 14: 148, ♀.

The interpretation of this species goes back to Gravenhorst (1829: 548) who referred to Gmelin's *Ichneumon obscurus* (1790). The name *Ichneumon obscurus,* however, was introduced earlier by Geoffroy (1785) but judging from the description has no bearing upon the species under consideration. Thus the name "*obscurus*" can not be retained in this case. According to Perkins (1962: 436) *C. obscurus* Gravenhorst is a synonym of *C. recreator* Fabricius, 1804 (= *C. titillator* (Linné, 1758)), but this can not be the case as Gravenhorst's "typical" female specimen of *C. obscurus* (label: f) does not have the broadened front tarsi. In Gravenhorst's collection *C. obscurus* is a mixture of different species, including a specimen with broadened tarsi. This is an explanation for the double interpretation by some authors of *C. obscurus* sensu Gravenhorst. In any case the name *C. obscurus* cannot be used. The next available name would be *C. australis* Tschek, 1870a. Unfortunately the female syntype, which may have belonged to the present species, is lost (see discussion under *M. titillator*); the remaining males are distinctly *M. titillator.* One other male with the same labels does not agree with the characters mentioned by Tschek and consequently did not belong to the type series of *C. australis:* it cannot make this name available for *C. obscurus* auctorum.

As the holotype of *C. turanus* Habermehl undoubtedly is a specimen of *C. obscurus* auctorum (non Geoffroy, 1785), I propose to use this name for the species under consideration.

Characteristics of the holotype of *Cryptus turanus.* Female, 15.9 mm. Front wing 11.0 mm long (wing greatly worn!). Labels: "Ispajran Alai sept.", a red Museum label "Typus", a label with Habermehl's writing "*Cryptus turanus* Hab. ♀". Holotype labelled accordingly. No. H 1306 Natur-Museum und Forschungs-Institut Senckenberg (SM).

Head with deep tentorial pits. OOL : POL, 7 : 6. Index of postanellus 5.0.

Thorax with axillary vein strongly pigmented, parallel to inner posterior margin of wing. Front femur short and robust, index, 3.8. Index of middle femur, 4.4. Index of hind femur, 5.5.

Gaster. Ovipositor 6.0 mm (tip: Pl. 2 Fig. 3).

Description of the female. — Body size 15.5—15.9 mm. Length of front wing 11.0—12.0 mm. Head black. Variations in colour of the head: mandibles reddish-ferruginous to yellow, clypeus and facial convexity orange or black, inner and outer orbits yellow or not. Antennae, including scapus, ferruginous to reddish or fuscous. Clypeus well developed, polished, with scattered punctures. Face with adpressed hairs, alutaceous, with fine close punctures. Facial convexity weak. Antennae with scapi in frontal aspect pear-shaped. Index of postanellus, 5.1. Frons deeply concave with tentorial pits deep. OOL: POL, 14 : 13 (almost equal). OOL : diameter posterior ocellus, 7 : 4 (for *M. reverendus* these figures are: OOL : POL, 6 : 7; OOL : diameter posterior ocellus, 1 : 1). Temple and gena polished, with regularly and widely placed fine punctures, separated by about 2—3 times their diameter.

Thorax black, sculpture moderately rough, mesoscutum more polished, with dense, fine punctures. Epomia well defined. Hind wing with axillary vein absolutely parallel to inner hind margin of wing. Propodeum with anterior transverse carina obliterated, posterior carina complete, heavy, subdentated sublaterally. Legs with colour variations as follows: coxae ferruginous to black. All femora orange to more fuscous, especially the hind femur. Tibiae and tarsi more brownish red to fuscous. Tarsal segments 2, 3 and 4 of hind leg tending to whitish. Front femur short and stout, index about 4.0—4.3 (somewhat more slender than in *M. titillator*). Middle femur index, about 4.5. Hind femur index, 5.1—6.0. Tarsal segments 2, 3 and 4 of front and middle leg very slightly expanded (compare Fig. 6 and 7) and with tarsal pecten. Tarsi of hind leg normal. Basitarsus of middle leg normal (Fig. 6).

Gaster with first segment ferruginous to black, the following segments mostly orange. Ovipositor about 0.45 of length of front wing. Tip of ovipositor Pl. 2 Fig. 3.

Male. — The following description of the male of *M. turanus* is based on three specimens, listed below. I am well aware of the fact that my description of this male is only tentative. The differences between the *M. turanus* and *M. pseudonymus* males are slight. The position of the axillus, though rather characteristic in the female of *M. turanus* seems nevertheless unreliable, nor does the index of femur 2 offer very strong evidence.

M. turanus is a very rare species with a central and southern palaearctic distribution as far as the available data show. Many of the older data on distribution are absolutely unreliable since "*Cryptus obscurus* auctorum" was badly mixed up with several other species. Only Roman (1910) had a clear conception of *M. turanus* (= *obscurus* auct.).

I have considered the possibility that *M. turanus* is only some kind of genetic variant of an other species, having the males of that species in common, or with no males at all (thus parthenogenetic). There is no direct evidence for this, but future students who are in a position to do breeding experiments with the *M. calescens-titillator-turanus-pseudonymus*-complex should not be surprised if something of this kind would be the solution of this problem.

Body length 12.9—15.0 mm. Front wing 9.2—10.2 mm long. Head black, in many specimens with rather conspicuous ivory to yellowish palpi, mandibles, labrum, clypeus, facial convexity, malar space, inner and outer orbits. Face with dense, suberect, silvery hairs. Frons moderately concave with, in most specimens very conspicuous dorsal tentorial pits. OOL : POL, 13 : 12 (variation 1 : 1). OOL : diameter posterior ocellus, 13 : 9 (variation 6 : 5).

Thorax black, sculpture moderately rough, mesoscutum closely and finely punctured. Many specimens show dense, suberect, silvery bristles all over the thorax. Epomia well shown. Wings subhyaline to somewhat infuscate. In the hind wing the axillary vein runs almost parallel to the inner margin of the wing (Pl. 1 Fig. 6, *M. pseudonymus*). In western Palaearctic material the axillary is usually not so heavily pigmented as in *M. titillator*. Legs slender, with no special features, colour rather variable but generally the coxae are black, sometimes with ivory spots on front coxae and trochanters. Front and middle femora and tibiae dirty orange to brownish-fuscous. Hind leg with femur more often black, but orange in a specimen from Cyprus. Tibia mostly fuscous, tarsus with basitarsus fuscous and segments 2, 3 and 4 white. An important character is the index of the middle femur, 6.7—7.1. I am not sure whether in certain specimens the values for *M. turanus* and *M. pseudonymus* might not overlap. Index of femur 3, 5.7—6.8.

Gaster with first segment mostly black and following segments orange to dirty reddish-brown with clasper fuscous. Specimens with a black apex may occur.

Material studied. — Cyprus: ♂, Yermasogia, III.1935, leg. G. A. Mavromoustakis (BM 1935-290). France: ♂, Dep. Gard, Collias-Sambillae, 27.V.1952, exc. Engel (MA). Greece ♂, Rhodus, leg. Erber (coll. Tschek) (NMW). Italy: ♀ : Bolzano, leg. Schmiedeknecht (SM); ♀, Bolzano, VI.1913, leg. Smits van Burgst (ELW); ♀, Valle de Ordesa, 23.VII., leg. Seitz (SM). U.S.S.R.: ♀, Ispajran Alai, coll. Habermehl (lectotype of *C. turanus*) (SM).

Meringopus suspicabilis (Kokujev, 1905)

Cryptus (s.str.) *piliceps* var. *suspicabilis* Kokujev, 1905, Russk. Ent. Obozr. 5 : 210, ♀.
Cryptus (s.str.) *piliceps* var. *dubitabilis* Kokujev, 1905, Russk. Ent. Obozr. 5 : 210, ♀.
Trachysphyrus suspicabilis; Townes, 1965, Mem. Amer. Ent. Inst. 5 : 184.

My knowledge of this species is based on a single female, kindly sent to me by Dr. Henry Townes. This specimen was apparently compared by Dr. Townes with the type-material of Kokujev's *C. piliceps* var. *suspicabilis* and *C. piliceps* var. *dubitabilis* and was found to be identical with both these varieties. In his Catalogue of the eastern Palearctic Ichneumonidae Townes (1965) has raised the var. *suspicabilis* to the status of species with var. *dubitabilis* as a synonym. I have not seen either the type of *C. piliceps* Kokujev, or the types of the two varieties and follow Townes; the more so since the above mentioned homotype specimen is especially interesting. It is intermediate between *M. titillator* and *M. turanus,* having the shape of the ovipositor tip and the position of the axillary vein as in the first and the slender tarsal segments as in the second. A similar specimen might elucidate the status of certain species within the genus *Meringopus* as being conspecific (compare my note on page 180). Lack of material does not allow further conclusions at this moment. A short description of the specimen follows here.

Female, 14.5 mm. Front wing 10.0 mm long. Labels: West-Pamir, VII.X.1928, leg. Reinig, Kirgisui 228. 3750 m; *Cryptus piliceps* var. *suspicabilis* ex Berlin 1963; Homotype: *Cryptus piliceps suspicabilis* Kok., H. K. Townes, 1964; Homotype: *Cryptus piliceps dubitabilis* Kok., H. K. Townes, 1964.

Head black. Frons deeply concave with conspicuous dorsal tentorial pits. Temple and gena polished, widely punctured. Gena (at base of eye): breadth compound eye, 6 : 5, thus gena broad. Malar space: breadth mandibular base, 22 : 15, thus malar space broad. Index of postanellus, 6.4, postanellus slender.

Thorax black. Wings rather infuscate with axillary vein in the hind wing strongly diverging from inner margin. Posterior transverse carina complete, bluntly dentate sublaterally. All legs brownish to fuscous, except for bright orange hind femur. All tarsi slender, not expanded. Index of hind femur, 5.5.

Gaster black with conspicuous blue iridescence. Tergite 2 to apex of gaster very finely alutaceous. Ovipositor 5.0 mm long, tip agreeing with Pl. 2 Fig. 4 *(M. titillator).*

Meringopus pseudonymus (Tschek, 1872)

Cryptus pseudonymus Tschek, 1872, Verh. zool.-bot. Ges. Wien 22 : 238.
Cryptus hellenicus Schmiedeknecht, 1890, Ent. Nachr. (Karsch) 16 : 100.
Cryptus caudatus Szépligeti, 1916, Ann. Mus. Nat. Hung. 14 : 245.
Cryptus setosus Szépligeti, 1916, Ann. Mus. Nat. Hung. 14 : 247.
Cryptus algericus Habermehl, 1918, Z. wiss. Insekt.-Biol. 14 : 146.

The identity of *Cryptus pseudonymus* Tschek was in most cases misunderstood by later authors. The presence of dorsal tentorial pits and the axillary vein in the hind wing running sharply parallel to the inner hind margin refers this species to the genus *Meringopus*.

Tschek (1870b : 405) placed two female specimens with his earlier described *C. incisus* (1870a: 121) males[1]). He stated some striking facts about these females, viz., "der nach aufwärts gekrümmte Bohrer" and "die 2 Wespen kamen aus 11 mm langen, 4.5 mm dicken Cocons von schmutzig aschgrauer Farbe". In a later paper Tschek (1872 : 237) withdrew these two females and replaced them by another specimen, stating that this would be the true *C. incisus* female. Finally Tschek (1872: 238) postulated that the first two supposed *C. incisus* females belonged to another, undescribed species, which he named *Cryptus pseudonymus*. Though Tschek stated with *C. pseudonymus* "Die nähere Beschreibung an der citierten Stelle" (1870b : 405) which is the place where he described his first *C. incisus* females, he gave a new, full diagnosis of *C. pseudonymus*, based on a third specimen which he got from Erber (Dalmatia). There is only one conclusion possible: this latter specimen is the holotype of *C. pseudonymus* Tschek, 1872; unfortunately the specimen is missing. Of the two earlier described specimens of *C. pseudonymus* (in fact, under the name *C. incisus*), recognizable by the upcurved ovipositor, the dirty grey cocoon on the pin and the original label "*incisus* m" (Fig. 9) at least one specimen is extant and I think it is quite reasonable to designate this specimen the neotype of *Cryptus pseudonymus* (Pl. 3).

There is no evidence whatever for synonymizing *C. incisus* and *C. pseudonymus*, as Habermehl did (1930 : 45). In fact his labelling of Tschek's apparent *C. incisus* syntypes as *C. pseudonymus* was remarkable. There was no reason for this without any indication about the identity of the *C. pseudonymus* male.

Characteristics of the neotype of *Cryptus pseudonymus*. Female, 11.0 mm. Front wing 8.0 mm long. Labels: a white tag, Tschek's writing "*incisus* m", a label "*Cryptus pseudonymus* Tschek ♀ Prof. Habermehl det.". Neotype hereby designated and labelled.

Head black. Palpi brown. Mandibles yellowish-brown, teeth darker. Clypeus with straight anterior margin, lateral corners incurved. Clypeus polished, with some punctures, implantations of grey hairs, rather convex. Face with close, adpressed grey pilosity, alutaceous, with fine close punctures. Facial convexity rather strong. Lower face conspicuously broader than long. Breadth between the eyes: length between the epistomal suture and base of antennae, 5 : 2. Frons deeply concave, with dorsal tentorial pits present. Frontal line well shown. Concavity of frons with transverse ridges. OOL-region alutaceous. OOL : POL, 1 : 1. Antennae, including the scapus rufous. Index of postannellus 4. Both apices missing. Frontal orbits marked yellow, outer orbits with vague marking. Temple and gena polished, with widely placed punctures, implantations of short hairs.

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[1]) Genuine *C. incisus* belongs to the genus *Cryptus* Fabricius, 1804, sensu stricto (types seen).

Gena broadening towards base. Breadth gena (at base of eye): breadth compound eye, 5.5 : 7.

Thorax black. Notum 1 with long, conspicuous epomia. Mesoscutum with well developed prescutal sutures, polished, regularly punctured (separated by about their diameter). Scutellum 2 convex. Propodeum rugose. Anterior transverse carina obliterated. Posterior carina medially obliterated, sublaterally developed into a heavy, crested dentation. Propodeal spiracles, index 4. Wings hyaline, nervulus (cu-a) antefurcal. In the hind wing the axillary vein diverges from the inner hind margin and further on runs exactly parallel to it. Legs with all coxae ferruginous in bright light (in daylight black). Trochanters ferruginous. All femora orange. Front and middle tibiae and tarsi dirty yellow, hind tibiae and tarsi somewhat fuscous. All femora stout, indices respectively: 3.6; 4.0; 4.4. All tarsi normal (Pl. 1 Fig. 1). Of the pecten along the inner side of the claw one seta, standing almost exactly at the base of the claw, is flattened. Ventral side of all tarsal segments with strong spines, but not quite forming a tarsal pecten.

Gaster with petiole and part of postpetiole black, following segments orange. Postpetiole and following tergites alutaceous. Ovipositor very long in relation to body length (5.5 mm) and upcurved. Tip of ovipositor dorsally distinctly straight (Pl. 2 Fig. 1).

Male. — In the key on page 171 I separate the males of *M. turanus* and *M. pseudonymus* by the index of femur 2. No other reliable characters could be found. I may refer to my remark on page 180 with respect to this question. The following description of the *M. pseudonymus* male must remain tentative.

Body length 12.0—14.4 mm. Front wing 8.6—10.3 mm long. Head black. Ivory or yellow marking may occur on: palpi, clypeus, facial convexity, inner and outer orbits, spot in OOL region. Frons deeply concave, dorsal tentorial pits conspicuous. Clypeus, mandibles and face with close, conspicuous, more or less adpressed silvery hairs. On temple and gena these hairs are erect to suberect.

Thorax black, covered with short, adpressed silvery bristles, in the ventral region these are somewhat longer and placed somewhat denser. Epomia strong. Wings subhyaline to rather infuscate. Sides of areola converging (compare *M. reverendus*). Position of axillary vein in the hind wing rather variable, either diverging from inner margin or parallel, with the apex sometimes bending towards posterior wing margin (Pl. 1 Fig.6); the latter position corresponds rather well with the female. Legs with all coxae and trochanters fuscous to black, the front trochanter may show an ivory spot; front and middle leg more often orange-red, the hind femur and tibia and basitarsus ranging from fuscous red-brown to black (except in specimens from Cyprus which have the hind femur also orange-red). Tarsal segments 2, 3 and 4 of hind leg white. Index of femur 2, 6.1—6.6; index of femur 3, 6.0—6.7. Propodeum with both transverse carinae complete.

Gaster with first segment and apex (including claspers) mostly fuscous to black; other segments dirty reddish to bright orange.

As far as I can judge, the type material of *Cryptus hellenicus* Schmiedeknecht is lost. Dr. J. Oehlke wrote me: "*Cryptus hellenicus* konnte ich nicht finden, auch nicht in meinen Unterlagen über andere Sammlungen, wo sich ebenfalls Typen von Schmiedeknecht befinden (Coburg Rudolfstadt, Wageningen usw)". Nevertheless Dr. E. Königsmann (Berlin) sent me two specimens under the label *C. hellenicus*. One of these is a female (Pl. 1 Fig. 1) from the south of France with two labels, neither of which in

Schmiedeknecht's handwriting. Though I consider this specimen to be indeed *C. hellenicus,* it is not a type specimen. The second specimen from Berlin bears a label in Schmiedeknecht's writing "*Cryptus* n.sp. dicht bei *C. hellenicus* Schmied.". This specimen from Hierro (Canary Islands) is certainly not belonging to *Meringopus* and it is neither a syntype of *C. hellenicus.*

On the ground of Schmiedeknecht's description and the above mentioned specimen from the Berlin Museum I conclude that *C. hellenicus* is synonymous with *C. pseudonymus* Tschek and in fact representing the same form as the species described by Szépligeti (*C. setosus*) and Habermehl (*C. algericus*), mentioned below. For this form, characterized by the long ovipositor, I propose to use the combination *M. pseudonymus* f. *hellenicus* (Schmiedeknecht, 1890).

The type series of *Cryptus caudatus* Szépligeti, 1916, comprises three females which Szépligeti received from Brauns who bred them from *Cirrhoedia ambusta* F., a Noctuid. All three specimens belong to *M. pseudonymus.*

Characteristics of the lectotype of *Cryptus caudatus.* Female, 10.2 mm. Front wing 7.7 mm long. Labels: a grey tag "10. Brauns", a white tag "Germania", a red tag and a white label in Szépligeti's writing "*Cryptus* 30 *caudatus* n.sp.". Lectotype herewith designated and labelled accordingly. Index of hind femur 4.7. Ovipositor 5 mm long, slightly curved. A very characteristic specimen of *M. pseudonymus.*

Two other specimens were labelled "paralectotype". One of these is badly damaged and practically worthless. The complete specimen has a white cocoon on the pin which appears to me as being rather too small for the specimen in question while also the aperture is too narrow to permit its escape. Both paralectotypes bear labels indicating the host "*Cirrhoedia ambusta*", while the specimen with the cocoon also bears a label "Brauns". Consequently there is no doubt about the origin of the material.

The description of *Cryptus setosus* Szépligeti, 1916, was most probably based on one specimen, now in the National Museum at Budapest. I consider this specimen to be the holotype. It is an exceptionally fine example of *Meringopus pseudonymus* f. *hellenicus.*

Characteristics of the holotype of *Cryptus setosus.* Female, 15.5 mm. Front wing 11.3 mm long. Labels: a grey tag "Alger", a white tag "593-9", a red tag, a white label with Szépligeti's writing "*Cryptus* 49 *setosus* n.sp.". Holotype hereby labelled.

Head deeply concave, with clear tentorial pits. Index of postanellus 5.1.

Thorax with axillary vein in hind wing heavily pigmented, diverging from inner margin of wing. All femora sturdy. Indices: front femur, 3.8; middle femur, 4.4; hind femur, 5.0. Front and middle tarsus somewhat expanded, with slight tarsal pecten.

Gaster with ovipositor somewhat upcurved, 11.6 mm long.

In Habermehl's collection at Frankfurt (Main) there is a specimen under the name "*Cryptus curvicaudis*" Hab. In my opinion *C. curvicaudis* is a nomen nudum since it was never published. Probably Habermehl changed his mind with respect to the name of this species, perhaps with *C. curvicauda* Thomson, 1896, in his mind. The specimen in question agrees with Habermehl's description of *Cryptus algericus* and I herewith designate it lectotype of the latter. The lectotype of *Cryptus algericus* is a specimen of *Meringopus pseudonymus* (Tschek, 1872) of which only the ovipositor is conspicuously longer than in Tschek's type specimen, for which reason I consider it to be a form of the latter, viz. *M. pseudonymus* f. *hellenicus.*

Characteristics of the lectotype of *Cryptus algericus.* Female, 13.0 mm. Front wing 9.4 mm long. Labels: a white tag "Ain Fezza Algier", a pink label "Type", a red museum label "Typus", a label with Habermehl's writing "*Cryptus curvicaudis* Hab. ♀". Lectotype designated and labelled accordingly.

Head black. Frons deeply concave, tentorial pits weak. Index of postanellus 5.0 (at 64 × magnification). Yellow markings on inner and outer orbits and on eye margin at vertex. Gena broad, breadth at base of eye : breadth compound eye, 9 : 8, gena polished with regular and fine punctures.

Thorax black. Wings rather infuscate. Axillary vein in hind wing parallel to hind margin. Legs with all tarsi somewhat broadened. All femora short and thick.

Gaster with first segment black; apex fuscous. Remaining tergites orange-red. Ovipositor long, about 9.4 mm.

Material studied. — The neotype ♀ of *Cryptus pseudonymus,* no locality mentioned (coll. Tschek) (NMW). Algeria: ♀, Ain Fezza Algier (the lectotype of *C. algericus*) (SM); ♀, Algier (SM); ♀, Algier (SM); ♀, Alger (the holotype of *Cryptus setosus*) (TM); ♂, Cherchell, IV.1929, leg. R. Meyer (coll. Habermehl as *Cryptus bucculentus*) (SM); 2 ♂, Sa Cruz-Oran, leg. J. Bequaert (coll. Habermehl)(SM). Cyprus: 4 ♂, 27.III.1924, leg. D. S. Wilkinson (BM 1932-5); 2♂, Amathus, III.1935, leg. G. A. Mavromoustakis (BM 1935-290) (somewhat dubious identification). France: ♀, France meridion. (ZM). Germany: 3 ♀, no locality, leg. Brauns (lectotype and paralectotypes of *C. caudatus*), coll. Szépligeti (TM). Italy: ♂, Savona, S. Pietro nr. Alassio, 20 m, 13.V. 1967, leg. R. T. Simon Thomas (PD) (dubious specimen). Spain: ♀, Malaga, leg. Schmiedeknecht (SM). "Asia min.", 22.V.1872, coll. Wüstnei (MC).

Biology. — The neotype is a remarkable specimen (Pl. 3). I think the cocoon on the pin is not a "*Lophyrus*-Kokon", as Habermehl (1930 : 45) suggested, but the wasp's own cocoon. This throws another light on the biology of the species, a *Diprion* species not being the host. The only reliable information comes from Szépligeti, who gives *Cirrhoedia ambusta* F., a Noctuid, as the host of his *Cryptus caudatus.* The area of distribution of *Cirrhoedia ambusta* correlates rather closely with that of *M. pseudonymus,* a mostly southern and Mediterranean species. I still expect that some larger Lepidopterous larvae will be discovered as hosts.

Meringopus reverendus nom. nov.¹)

Cryptus rufiventris Habermehl, 1918, Zeitschr. f. wiss. Insekt.-Biol. 14 : 150 (name preoccupied by Gravenhorst, 1829, and Szépligeti, 1916).

Cryptus erythrogaster Meyer, 1933, Tables systématiques des hyménoptères parasites (fam. Ichneumonidae) de l'URSS et des pays limitrophes 2: 31 (new name, but preoccupied by Holmgren, 1868).

The type series, a ♀ and ♂ mentioned by the author, is present in the Habermehl collection at Frankfurt (Main). The labelling by Reitz (Townes, 1965 : 179) is a misunderstanding. The specimens represent a distinct species which up to now I have not

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¹) Meaning: inspiring awe, venerable.

met with in the western Palaearctic region. At first sight the specimens resemble *Cryptus albatorius* auctorum but differ in the presence of dorsal tentorial pits. The species stands much closer to *M. cyanator* (pag. 188).

As regards the nomenclature, the following notes may be given. Gravenhorst's *Cryptus rufiventris* was later (Viereck, 1914) taken as the type-species of *Caenocryptus* Thomson, 1873. Habermehl's name *C. rufiventris* is preoccupied by *C. rufiventris* Szépligeti, while Meyer's new name for *C. rufiventris* Habermehl was already used by Holmgren. I propose *Meringopus reverendus* nom. nov. as a replacement name.

Characteristics of the lectotype of *Cryptus rufiventris* Habermehl. Female, 13.0 mm. Front wing 10.4 mm long. Labels: a white tag "Ispajran Alai sept.", a red museum label "Typus", a label with Habermehl's writing "*Cryptus rufiventris* Hb., ♀". Lectotype herewith labelled and designated.

Head black. Palpi brown, mandibles with base black, a medial orange spot and teeth deep red. Labrum, clypeus and facial convexity red-brown. Clypeus rather convex, polished, here and there with a puncture. Facial convexity defined. Face for the greater part alutaceous, with adpressed silvery hairs. Frons deeply concave with conspicuous dorsal tentorial pits. Antennal scrobes more or less polished, with some transverse wrinkles. Upper frons rugose. OOL : POL, 6 : 7. Posterior ocellus close to compound eye, diameter ocellus: OOL 1 : 1. Right antenna missing beyond pedicel. Scapus ferruginous, rest of antenna opaque orange. Index of postanellus, 5.0. The head shows the following yellow marking: a spot connecting antennal socket and compound eye, frontal and outer orbit. Spot on eye margin in OOL region. Breadth gena (at base of eye) : compound eye, 1 : 1. Temple and gena polished, with widely placed punctures, implantations of adpressed silver hairs.

Thorax black, roughly sculptured. Epomia strong. Propodeum with anterior transverse carina missing, posterior carina complete, sublaterally dentated. Index of propodeal spiracle, 3.8 (round elliptic). Wings with areola subquadrate, broad, anterior side: 2 rm, 1 : 1, sides weakly converging. Axillary vein in hind wing robust, well pigmented and absolutely parallel to hind margin. Legs with all coxae and trochanters ferruginous, rest bright orange. Tarsi not broadened. The difference from *M. turanus* lies in the index of the front femur: in *M. reverendus* 6.0 (slender), in *M. turanus* 4.0 (stout) (at 16 × magnification).

Gaster bright orange. Finely alutaceous. Length of ovipositor 5.8 mm (Pl. 2 Fig. 8). Tip of ovipositor dorsally somewhat broadened, differing from *M. turanus*. In the latter the nodus is sharply defined.

Male. — Paralectotype labelled accordingly. Labels: "Ispajran Alai sept.", a red museum label "para-typoid", a label with Habermehl's writing "*Cryptus rufiventris* Hab. ♂". This male undoubtedly belongs with the female, as it agrees in the most important characters, viz. very conspicuous, deep, dorsal tentorial pits, the axillary vein broad and parallel to the hind margin. The only differential character with the males of *M. titillator* and *M. turanus,* as far as I could judge, lies in the shape of the areola, being almost square in the single *M. reverendus* male which I studied, but this could well be an unreliable character.

Though unreliable, the colour of this male might be of some use for its recognition. Legs beyond trochanters bright orange. Tarsal segments 2, 3 and 4 of the hind leg whitish and somewhat thickened as in some males of the *cyanator* group. For this reason I think that this species might belong to the *cyanator* group.

Gaster entirely bright orange, except for tip of clasper.

Note. — For the present I think that this male may be properly identified only in the presence of female material.

Meringopus hannibal (Schmiedeknecht, 1900)

Cryptus hannibal Schmiedeknecht, 1900, Termész. Füzetek 23 : 245, ♀.
?Ichneumon atrator Fabricius, 1787, Mantissa insectorum 1 : 266, ♂ (no. 82) (nomen dubium & oblitum).

The association of this species with the genus *Meringopus* remains somewhat doubtful as neither of the two important generic characters are satisfactorily defined: (1) the dorsal tentorial pits are rather weakly developed, but in comparison with other species must be acknowledged to be present and (2) the axillary vein in the hind wing, though well pigmented, runs exactly parallel to the hind margin. Schmiedeknecht considered his species "Ein echter *Cryptus* im engeren Sinne", but I think this does not hold: at the most the species stands between *Cryptus* and *Meringopus*.

When searching the Fabricius collection for forgotten or unidentified type material, I found under the label "*atrator*" the probable male of this species, but I rejected this specimen as type, because Fabricius stated in Entomologia Systematica 2 : 165 (no. 131) with *atrator*: "Habitat in Europa" and again in Systema Piezatorum : 67 (no. 73) "in Europae hortis", while the specimen bears a label "Tunis". In view of these facts about *Ichneumon atrator*, I propose to retain Schmiedeknecht's name for this species and to reject the name *Ichneumon atrator* on the strength of Article 23b (nomen oblitum).

Characteristics of the lectotype of *Cryptus hannibal*. Female of 16.0 mm. Front wing 12.2 mm long. Labels: a light bluish label not in Schmiedeknecht's handwriting: "1897 Tunis Manubia Schmiedekn. S"; a white tag with Schmiedeknecht's writing: "Manubia bis Tunis"; another white tag also with the author's writing: "*Cryptus hannibal* Schmied. ♀"; an orange label (printed) "Type". Lectotype hereby designated and labelled accordingly.

Head black, minute light spots on inner and outer orbits. Antennae brown. Malar space : breadth mandibular base, about 1 : 1, thus rather broad. Index of postanellus, 6.1. Dorsal tentorial pits almost round, indicated, but not conspicuous. Their centre with a characteristic flattened elevation. Concavity of lower frons conspicuous.

Thorax black. Pleural parts and propodeum roughly rugose. Mesoscutum somewhat more smoothly sculptured, densely punctured. Prescutal sutures broad, with rough transverse wrinkles. Wings rather infuscate. Axillary vein in hind wing heavily pigmented, entirely parallel to hind margin, its apex bending towards hind margin. Propodeum with indication of anterior transverse carina. Posterior transverse carina present, sublateral corners developed into blunt horns, which rise some 0.20 mm above the level of propodeum. Legs slender, brown. Index of front femur, 4.9; of hind femur, 6.2.

Gaster brownish (in bright light); I did not observe the blue iridescence mentioned by Schmiedeknecht. Finely coriaceous. Ovipositor 4.8 mm, tip of the *Cryptus*-type.

Two other specimens, both syntypes, identical with the lectotype, were labelled by me paralectotypes.

Male. — This was first mentioned by Schmiedeknecht (1904—1906), but the description is not sufficient to separate it from males of other species. The only male I have seen so far is the one under the label "*atrator*" in the Fabricius "København" collection. This specimen agrees with Schmiedeknecht's females. A short description follows here.

Length of specimen 14.6 mm. Front wing 10.0 mm long.

Head black, except for white spot on clypeus and slight markings on inner and outer orbits. Mandibular base, face, temple and gena with rather conspicuous grey hairs. Dorsal tentorial pits almost round, indicated, but not conspicuous, their centre with a flattened elevation. Tyloidea on antennal segments 20—24 (the last two very weak).

Thorax black, roughly sculptured. Axillary vein in hind wing rather pigmented, long, entirely parallel to hind margin, its apex bending towards hind margin. Propodeum with both transverse carinae present. Sublateral corners of posterior carina developed into horns, which rise about 0.15 mm above the level of propodeum. Apex of femur 1 and tibia 1 somewhat fulvous. Index of femur 2, 6.8. Index of femur 3, 6.2. Tarsal segments 2 (not the base), 3 and 4 (last segment missing), of hind leg, white.

Gaster black, finely and closely coriaceous.

Material studied. — Tunis: 3 ♀ (including the lectotype of *C. hannibal*), Tunis bis Manubia, 1897, coll. Schmiedeknecht (ZM); ♂, Tunis, Vahl. Mus. S. & T. L., coll. Fabricius (MC).

Meringopus cyanator (Gravenhorst, 1829)

Cryptus cyanator Gravenhorst, 1829, Ichneumonologia Europaea 2 (2) : 442, ♀ ♂ (no. 16).

The description of this species is based on male and female specimens from Poland and Germany. In the collection at Wroclaw are a female and a male specimen, respectively, bearing tags "f" and "m", according to Townes (in lit., 1964) both are syntypes.

Characteristics of the lectotype of *Cryptus cyanator*. Female, 17.7 mm. Label: "f". Lectotype hereby designated and labelled accordingly. A dirty specimen, antennae missing.

Thorax black, with orange marking on subalar prominence. Epomia well developed, running up from anterior margin of notum 1 to prescutal suture. All femora orange-brown, all tarsi brown.

Gaster very dirty, colour not clear.

Characteristics of the paralectotype of *Cryptus cyanator*. Male, 13.7 mm. The specimen is in a better condition than the lectotype. Label: "m". Paralectotype, labelled accordingly.

Head black, strongly pilose, especially face and clypeus with long greyish-black hairs.

Thorax black. Femora and tibiae of front and middle leg orange-yellow. Hind legs with femur orange, tibia and tarsus more brownish.

Gaster with a weak violet iridescence, blackish.

Description of the female. — Body size 14.9—15.7 mm. Length of front wing 10.5—11.2 mm.

Head black. Palpi brown. Mandibles medially deep red, teeth black. Labrum brown. Clypeus rather convex. Facial convexity rather weak. Face roughly sculptured. Scapi short, pear-shaped (Fig. 3). Postanellus comparatively slender, index about 5.6. Antennae rufous-brown. Frons with only the region of the antennnal scrobes concave, with tentorial pits well shown (Fig. 3). Frons rugose. OOL : POL, 8 : 7. Posterior ocellus remote from compound eye, about 2 × the diameter of ocellus. Punctures on vertex touching. Temple and gena polished. Temple with rough punctures, somewhat striated. Punctures on gena placed somewhat wider. Breadth gena : breadth compound eye, 1 : 1 (gena broad). Genal carina not reaching hypostomal carina, abruptly ending at about the breadth of the mandibular base beyond lower mandibular articulation. Head with long conspicuous, erect, brownish (in strong light) hairs, on gena reaching about half the breadth of mandibular base. Outer orbits marked orange-red, reddish spot in OOL-region.

Thorax black, all over roughly sculptured, except for mesoscutum which is more polished with shallow, irregularly placed punctures. Epomia shown. Propodeum with anterior transverse carina obliterated, posterior carina complete, somewhat crested sublaterally. Horizontal part of propodeum medially short, steeply sloping to apex. Wings subhyaline to slightly infuscate (I expect specimens to occur with strongly infuscate wings). Axillary vein in the hind wing strongly pigmented, diverging from inner hind margin of wing (Fig. 2). Legs with all coxae and trochanters ferruginous to black. All femora bright orange, tibiae brownish to fuscous. The apex of the hind tibia appears fuscous in daylight, but in strong artificial light it has an orange-brown colour. Tarsi mostly fuscous in daylight, dirty orange in artificial light. Thorax with conspicuous, long, erect brownish hairs (in strong light!). Subalar prominence marked orange.

Gaster black, with faint violet iridescence in daylight, in artificial light the iridescence is invisible and the gaster then shows a ferruginous undertone which suggests that specimens with some tergites completely ferruginous or reddish might occur. Apical margins of segment 1 and tergite 2 ferruginous to orange. Ovipositor 4.5—5.5 mm. Tip as in Pl. 2 Fig. 2, ridges on the ventral valvulae not projecting below the ventral edge.

Male. — The distinction between the males of *M. cyanator* and *M. nigerrimus* is rather difficult, apart from some unreliable differences in colour.

Body size 12.8—14.0 mm. Length of front wing 8.8—9.2. Colour and sculpture conform to female. Hairs on head erect, moderately long to very long as in *M. nigerrimus.* Dorsal tentorial pits present (see note).

Thorax with axillary vein in hind wing diverging from inner hind margin of wing. Femur 2, index 6.1. Hind tarsus somewhat swollen as in other *Meringopus,* brownish-ferruginous to fuscous.

Gaster with violet-bluish iridescence (to be observed in daylight).

Material studied. — ♀ ("f") and ♂ ("m"), resp. lectotype and paralectotype of *C. cyanator* (ZI). Germany: 2 ♀, label illegible (coll. Dittrich) (ZI). Netherlands: ♀, Leiden, 23.VI.1879 (coll. Smits van Burgst) (ELW); ♂, ?Groningen (ELW); ♀, label illegible, 3.VII.1923 (coll. den Hoed); no locality, ♂ (ELW).

Note. — In the collection Smits van Burgst (ELW) is a male without data, belonging to the *cyanator*-group, not showing the dorsal tentorial pits. The specimen has the axillary vein in the *Meringopus* position and shows the violet iridescence. The index of the middle femur is 7.3, very slender. The specimen could not be identified with certainty.

Meringopus nigerrimus (Fonscolombe, 1850)

The case of *M. nigerrimus* is still rather unsatisfactory, due to paucity of specimens. Upon examination of female western Palaearctic material of the *cyanator*-group (item 5 of key) two clearly different segregates may be found, viz. specimens with the ridges on the ventral valvulae of the ovipositor tip scarcely developed and thus not projecting below the ventral edge, and specimens with these ridges well developed and showing below the ventral edge (Pl. 2 Fig. 2 and 5, 6 and 7). The first segregate covers *M. cyanator*. The second is composed of two rather different subsegregates of which the most common is probably the one described as *Cryptus murorum* Tschek, 1872 (syn. *C. serratus* Thomson). Material of the other subsegregate is difficult to obtain. According to A. Seyrig (1928), who investigated the type, Fonscolombe (1850) described this form as *C. nigerrimus*.

I propose the following nomenclature:

Meringopus nigerrimus nigerrimus (Fonscolombe, 1850), the nominate subspecies. A completely black subspecies, to date found in southern Europe and central Asia.

Meringopus nigerrimus murorum (Tschek, 1872). Subspecies with all femora bright orange, to date found in the Alps and Scandinavia.

Meringopus nigerrimus nigerrimus (Fonscolombe, 1850)

Cryptus nigerrimus Fonscolombe, 1850, Ann. Soc. ent. France (2) 8: 366, ♀ (no. 6).

?Cryptus balearicus Kriechbaumer, 1894, An. Soc. Esp. Hist. nat. 23: 242, ♀ (no. 10) (sec. Seyrig, 1928b: 149).

Description of the female. — Body size 8.6—11.5 mm. Length of front wing 6.8—8.5 mm.

Head black. Palpi fuscous. Mandibles deep red, teeth darker. Labrum light brownish to fuscous. Clypeal and facial convexity defined. Face closely punctured, towards the inner orbits with microsculpture between and in the punctures. Frons roughly sculptured, lower half shallowly concave with dorsal tentorial pits rather poorly developed in a specimen from Spain to more deeply concave with clear tentorial pits in a specimen from central Asia. OOL : POL, 12 : 11 (almost 1 : 1), with the posterior ocellus remote from the compound eye. OOL : diameter posterior ocellus, 2 : 1. Vertex roughly sculptured, somewhat wrinkled. Temple and gena comparatively roughly sculptured, with rough wrinkles. Antennae fuscous, slender. Index of postanellus 6.1—7.0, slender. Breadth mandibular base : malar space, 1 : 1 (about). Entire head with conspicuous, long, erect brownish (in strong light) to fuscous hairs, about as long as the breadth of the mandibular base.

Thorax black. Epomia shown. Entire thorax roughly sculptured, except for mesoscutum which is more polished. Wings slightly to rather infuscate. Axillary vein in hind wing strongly pigmented and diverging from inner hind margin of wing in specimens from Asia to weakly pigmented and more parallel to inner margin in a specimen from Spain. Legs with all coxae and trochanters deep blackish-red to black. Front and middle femora deep blackish-red to black. Hind femora more ferruginous-fuscous. Femur 2 on an average (index, 6.1) somewhat more slender than in *M. cyanator* (index, 5.0—5.2), but this character is probably unreliable. Propodeum with medial indication of anterior carina. Posterior carina medially somewhat obliterated to complete, sublaterally, more strongly developed into broad teeth. Vertical part of propodeum rather steeply sloping to apex. Propodeal spiracles small, index 2.4—2.6, situated laterally. Entire thorax with brownish to fuscous, erect hairs.

Gaster black, with bluish to violet iridescence (in daylight). Ovipositor 3.0—3.8 mm. Ventral valvulae at ovipositor tip with conspicuous ridges, projecting beyond the ventral edge (Pl. 2 Fig. 6).

Male. — Body size 10.4 mm (one specimen!). Length of front wing 7 mm.

Head black. Palpi and labrum brownish. Mandibulae reddish with teeth black. Clypeus and face roughly punctured. Clypeal convexity shown, facial convexity weak. Breadth mandibular base : malar space, 1 : 1. Frons roughly sculptured, only the region of the antennal scrobes concave. Dorsal tentorial pits impressively shown in a specimen from the Alai Mountains. OOL : POL, 11 : 10 (almost 1 :1). OOL : diameter posterior ocellus, 2 : 1, posterior ocellus well away from compound eye. Vertex, temple and gena roughly sculptured. Antennae long and sturdy. Tyloidea on segments 15—22. Entire head with conspicuous, long, erect hairs, about as long as the breadth of gena at base of compound eye.

Thorax black, roughly sculptured, with long, erect hairs. Wings slightly infuscate. Axillary vein in hind wing well pigmented and clearly diverging from inner hind margin of wing. Legs with all coxae and trochanters black with a reddish tone. Front and middle femora fuscous with brownish red apex. Hind femur fuscous-ferruginous (in strong light). In the specimen from the Alai Mountains the middle femur is comparatively slender, index 7.5 (6.4 in a *M. nigerrimus murorum* ♂). Front tibiae orange-brown, middle and hind tibiae and tarsi fuscous to brownish. The hind basitarsus and following tarsal segments show the rather heavy build of other *Meringopus* species. Propodeum with propodeal spiracles rather small, short elliptic, index 2. Posterior carina complete, sublaterally heavily dentated.

Gaster black with violet iridescence, slender.

Material studied. — Spain: ♀, Flix, prov. Tarragona, 6.V.1916, leg. F. Haas (coll. Habermehl) (SM). U.S.S.R.: ♀ ♂, Ispajran, northern Alai Mountains (coll. Habermehl) (SM).

Meringopus nigerrimus murorum (Tschek, 1872)

Cryptus murorum Tschek, 1872, Verh. zool.-bot. Ges. Wien 22: 234, ♀ ♂.
Cryptus serratus Thomson, 1873, Opuscula Entomologica 5: 478, ♀.

The lectotype of *C. murorum* was designated by Townes (1962 : 185).

Characteristics of the lecotype of *Cryptus murorum*. Female, 9.2 mm. Front wing 7.5 mm long. Labels: Stilfser Joch 8.IX.71 (violet ink, Tschek's writing), Tschek 1872 Piesting (printed), *murarius* m (violet ink, Tschek's writing), *murorum* Tsch. ♀ det. Habermehl. A label "lectotype *Cryptus murorum* Tschek, design. H. Townes" was added by the present author.

Description of the female. Body size 9.2—10.8 mm. Front wing 7.5—9.2 mm long.

Head black. Palpi dark brown. Mandibles with some punctures. Clypeus convex, polished, with scattered punctures. Facial convexity moderately developed, with heavy punctures. Lateral parts of face closely punctured, towards inner orbits with microsculpture between and in the punctures. Malar space broad, with conspicuous alutaceous sculpture. Breadth mandibular base : malar space, 4 : 5 (almost 1 : 1). Antennae mostly black, long and slender. Index of postanellus 5.2—5.6, slender. Frons roughly sculptured, only the scrobal region concave. Dorsal tentorial pits well shown. OOL : POL, 6 : 5, 7 : 5, 13 : 11. OOL : diameter posterior ocellus, 7 : 4, 12 : 7, 13 : 7. Vertex rugose. Temple and gena ranging from roughly wrinkled to wrinkled and punctured. Head somewhat flattened in the antero-posterior line. Breadth compound eye: breath gena, 1 : 1 (about). The genal carina does not meet the hypostomal carina, but is interrupted beyond the mandibular base at about the breadth of the mandibular base. Head with erect, long, in bright light somewhat brownish hairs. Vague reddish markings on outer orbits and a reddish spot on eye margin in OOL-region.

Thorax black. Subalar prominence somewhat fulvous to black. Entire thorax, including the coxae, with erect, long, somewhat brownish hairs, rugosely sculptured, except for mesoscutum and scutellum 2, which are more polished, with scattered heavy punctures. Epomia shown. Wings slightly infuscate. Axillary vein in hind wing pigmented and diverging from inner posterior margin of wing. Legs with front coxae dark ferruginous to black, middle and hind coxae including the trochanters, almost black. All femora orange and somewhat fuscous at base. The index of the middle femur shows rather striking variation, not quite explicable: 4.7 (Scandinavian specimen)—5.2—6.0 (Alpine material). Tibiae and tarsi of front and middle legs orange. Tibia 3 more fuscous. Basitarsus 3 light brown, the following tarsal segments tending to pale yellow (in daylight).

Gaster blackish with conspicuous violet iridescence. All tergites coriaceous. Ovipositor 3.1—3.7 mm. Ventral valvulae at tip of ovipositor with conspicuous ridges, projecting beyond the ventral edge (Pl. 2 Fig. 5, paralectotype and Fig. 7).

Male. — I have been able to study one male, viz. the ♂ paralectotype. In morphology and colour this specimen closely resembles the female, but it also stands near to *M. cyanator* male. The only conspicuous difference from *M. cyanator* male lies in the colour of the hind tarsi. In the latter species these are dark brown, while in *M. nigerrimus murorum* they are for the greater part white, the basitarsus and the last segment being somewhat fulvous. There is also a difference in size, *M. nigerrimus murorum* being the smaller, but this is not a reliable character. In my key to the males I have used the length of the hairs on the head as a differential character but it should be realized that I have seen only one male of *M. nigerrimus murorum*.

Characteristics of the paralectotype of *Cryptus murorum*. Male, 10.3 mm. Front wing 6.5 mm long. Labels: 24.IV.71 (Tschek's writing), Type (in red ink), Tschek 1872 Piesting (printed), *Cryptus murorum* Tschek ♂, prof. Habermehl det. Paralectotype hereby labelled.

The holotype of Thomson's *Cryptus serratus* is kept in Entomologiska Institutionen of the University of Lund, Sweden. It was kindly sent to me by Fil. lic. Hugo Andersson. As Thomson in his original description does not mention the number of specimens he had and as there is only one specimen in Lund, I consider this to be the holotype. The specimen is identical with Tschek's *Cryptus murorum,* though it shows some minor differences.

Characteristics of the holotype of *Cryptus serratus*. Female, 10.8 mm. Front wing 9.2 mm long. Labels: a small white tag "Bgs" or "Bgt" (Bogestad), a red rimmed box label "*serratus*", a green museum tag (modern) "no. 1968-1". Holotype labelled by me accordingly.

Index of middle femur 4.7. The tip of ovipositor with the typical ridges of *M. nigerrimus murorum* (Pl. 2 Fig. 7).

Distribution. — *M. nigerrimus murorum* is holarctic (Townes, 1962 : 186).

Material studied. — Austria: ♂, paralectotype of *C. murorum,* Piesting, 27.IV.1871, leg. Tschek (NMW); ♀, paralectotype of *C. murorum*, Piesting, 27.IV.1871, leg. Tschek (NMW). Italy: ♀, lectotype of *C. murorum,* Passo del Stelvio, 8.IX.1871, leg. Tschek (NMW). Sweden: ♀, holotype of *C. serratus,* Bogestad (Skåne), coll. Thomson (ML).

Meringopus pilosus (Szépligeti, 1916)

Cryptus pilosus Szépligeti, 1916, Ann. Mus. Nat. Hung. 14 : 244, ♀.

The type series of *Cryptus pilosus* comprises three females and is in the National Museum at Budapest. The lectotype was labelled by Townes, in 1960 (Townes, 1965). The following description of the female is based on the three syntypes. *Cryptus pilosus* belongs to the genus *Meringopus.*

Description of the female. — Body size 13—14 mm. Length of front wing 10 mm. Slender for a *Meringopus* species.

Head black. Palpi black. Breadth mandibular base : malar space, 3 : 5. Face roughly sculptured, with conspicuous, long, erect, silvery hairs (about as long as the distance between the antennal socket and the compound eye). Entire frons deeply concave, with conspicuous dorsal tentorial pits. Lower half of frons polished, with some transverse wrinkling. Ocellar region more heavily wrinkled. OOL : POL, 14 : 13. OOL : diameter posterior ocellus, 2 : 1 (OOL-region broad). Temple and gena broad, subpolished, with long erect, silvery hairs and widely placed heavy punctures. Genal carina not meeting the hypostomal carina and ending about 2 × the breadth of the mandibular base beyond the lower articulation of the mandibula. Inner and outer orbits with narrow yellow lining. Spot on eye margin in OOL-region. Antennae slender; index postanellus 6.2, slender.

Thorax black, covered with erect, silvery hairs. Epomia present, running into crista. Mesoscutum and scutellum 2 more polished, the first with rather widely spaced rough punctures. Rest of thorax roughly sculptured. Both propodeal transverse carinae developed, the anterior tending to obliteration, medially conspicuously near to each other, the posterior showing sublateral dentation. Index propodeal spiracles, 2.4. Wings hyaline to somewhat infuscate. Areola subquadrate. Axillary vein in the hind wing diverging from inner margin of wing. Legs with all coxae and trochanters black. Front and middle legs ranging from completely black to ferruginous. Hind femora orange, tibiae and tarsi black. All femora highly polished, front and middle femora laterally with a pattern of adpressed hairs. Tibiae with close, short, adpressed hairs and suberect, conspicuous spines. Tarsal segments 2, 3 and 4 of all legs show a tendency towards a tarsal pecten.

Gaster with a very conspicuous colour: segments 1, 2 and 3 ranging from ferruginous-red via brownish-red to blackish. In specimens with the first three segments fuscous, the anterior and posterior margins of these segments are yellowish to reddish. Postpetiole and the following two tergites almost polished, further tergites very finely alutaceous. The gaster, with exception of the first segment, shows a brilliant violet-blue iridescence, which is stronger and more bluish on tergite 4 and further, thus giving the gaster a two-coloured aspect. Ovipositor long, 7.0 mm, the tip somewhat upcurved.

Male. — In the Amsterdam Zoological Museum I found a male collected by the Dutch Karakorum expedition in the Khardong valley, between 4000—4500 m. This male seems to be rather related to Szépligeti's females from the Alai Mountains. Though I realize that it is at present impossible to make a decision, I have placed this very characteristic Karakorum specimen tentatively in the key. With more material from that region this could at least give later students a suggestion. The most important differences between the Karakorum male and Szépligeti's females are the sculpture of the tergites 2 and 3, which are polished in the female and alutaceous in the male. In the female the femora are highly polished but in the male not obviously so. Both characters could of course prove to be not more than subspecific differences. Neither the colour of the gaster in the male agrees with that of the females. The most important characters of this male specimen are given in the key to the males.

Remark. — The species is not conspecific with *M. cyanator* as was suggested by earlier authors. It migth however prove to be the same as *Cryptus insidiator* Smith, 1879, and *Cryptus nursei* Cameron, 1906 (BM type 2083 a and b; lectotype Gupta, 1967) from Kashmir, 8—9000 ft, which is a species of *Meringopus*. I did not have opportunity to study these types.

Recently I found a paper by Roman (1935) who identified the above mentioned Karakorum male with *Cryptus pilosus* Szépligeti.

Material studied. — India: ♂, Khardong valley, 4000—4500 m, 22.VII.1930, leg. J. A. Sillem (Ned. Karakorum expeditie) (MA). U.S.S.R.: 3 ♀, Alai Mountains, leg. Korb, coll. Szépligeti (type series of *Cryptus pilosus*) (TM).

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